DISCOVERY

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Correlation on academic performance of JSS 2 and SS 2 students in mathematics in public schools in Ondo west local government area, Ondo, Nigeria

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ABSTRACT

This study focused on the correlation on academic performance in mathematics in JSS 2 and SS 2 in public schools in Ondo West Local Government Area. Research questions and hypothesis were raised for the purpose of effectively carrying out the study after which the spreadsheet of JSS 2 and SS 2 of the same students were used to provide necessary information. One hundred and twenty (120) were randomly selected from six (6) different schools in the area of focus and t-test method of statistical analysis was used to analyze the data collected. It was revealed that students performed better in JSS 2 than SS 2. It also revealed that study habits (work methods and time management) of the students were correlated with their success and students who have favourable study habits will likely perform very well in both JSS 2 and SS 2.

Keywords: Academics, Education, Mathematics

1. INTRODUCTION

Academic performance of students especially in mathematics had been issue of discussion to stakeholders in education. There are many contributing factors to either positive or negative performance of students. The transformation of most young students into adulthood may also have a role to play, hence there is a need to look at the academic performance of students in JSS 2 and SS 2. Many research works have carried out on academic performance of students in external examination JSS 3 (junior WAEC) and SS3 (senior WAEC). Some grades or results obtained in these examination many not be true tests of the students as some them are assisted through malpractice. This may not be the case of internal examination conducted by internal examiners in JSS 2 and SS2.

Therefore, it is possible for a student to perform well when he /she was in JSS 2 and perform woefully on getting to SS 2 and vice-versa especially in mathematics. This may be as a result of many factors like teachers motivation, management and

administration of school facilities and the likes. In other case, can student perform well in JSS 2 as a result of his full attention, focus and hard work but perform bad or woefully in SS2 due to some factors that arose at that particular period of time.

Therefore, there will always be factors that will rise against students either positively or negatively in JSS2 or SS 2 and this will have effect on his academic performance, since he/she won't arrive at JSS 2 and SS 2 at the same period of time, no matter his family background.

The issue of student's academic performance is very crucial in the sense that the quality of schools, teachers and every other input determines the output which is student's academic performance. A conducive learning environment, peer pressure, the physical setting of a school, quality of teachers and learning materials could boost a child's academic performance in mathematics and if they are not available, it will result to low performance of the child.

This is why, it has been found pertinent to investigate how standard of school could determine student's academic performance in mathematics in JSS 2 and SS 2 classes.

Statement of the Problem
The education of the child is above all a cooperative effort that involves the school, teachers, parents and the community. Therefore, investigation is tends to be carried out on the problems faced by students in JSS 2 and SS 2 which can have effect on their academic performance.

Purpose of the Study
This study aims at relating pupils performance in JSS 2 and SS2 in public schools, and find out if there is any correlation in the academic performance of students in JSS 2 and SS 2. Also, if the academic performance of the students in mathematics in JSS 2 and SS 2 of public schools influenced or caused by any factor.

Significance of the Study
The significance of this study tends to establish the correlation on students performances in JSS 2 and SS2. Since, some students perform woefully in JSS2 and perform better in SS2 and vice-versa, while some students perform excellently in both classes and some, woefully. JSS 2 and SS 2 was used as a result of its "middle class" in senior secondary school classes in order to give accurate result of the paper work.

Conceptual Framework of Pupils' Performance in Public Schools
The independent variable (i.e. nature of school) is conceptualized in terms of public schools which is assumed to affect pupils academic performance (dependent variable).

The Determinant of Students Performance
Education is a very costly project for nations and individual family. Other include; Teachers' quality, availability and adequacy of educational resources and Study habit and attitude of students.

Study Habit and Attitude of Students
Many studies have analyzed the factors behind the performance of students. Mutsotso, S.N. & Abenga E. S. (2010); and Nagaraju (2004), found that students usually do not devote sufficient time to their studies and seldom have proper study habits.

Family Environment
Wilson (1992) suggested that "family environments were much more influencing adolescents aspiration". It is the family that makes the child to identify himself with the society, culture, religion or social class. The family continues to exercise a strong influence over the child's live academic performance in the school.

Family Size
Regular medical follow-up of families help to have a good start in life and lessen the chances that they will later have serious health problems or trouble learning. If a student is hungry in school he/she is less likely to concentrate.

Socio-Economic Status of Parents

Socio-economic class has a bearing also on learners' academic performance in school. However, children from the former, have opportunity to various ways because, their parents will find it easy to provide for their children learning materials like books, textbooks, biro, pencils etc. and cater for them and this provided materials will makes the children to be serious and this will aid their academic performance.

Educational Level of Parents

Sarigiani (1990) mentioned that a student from parents with higher educational levels tends to do better than the less advantaged group. Aside hereditary in terms of intelligent quotient, literate parents will be able to help their children in reading, studying, doing assignment, etc. as well as passing across knowledge, skills and values onto them.

Marital Instability

Okonkwo (1992), noted that child's personality develop in the continuous process of interaction with his family environment. So, unstable family may lead to poor academic performance of the students. For instance, in some homes, the marriage is stable and happy parents live together happily with the children, encourage them and show interest in their school work. But if home is not stable, the children will not be able to concentrate on their studies.

2. RESEARCH METHODOLOGY

This study employed a quantitative paradigm with a descriptive correlational design to compare the academic performance of students in JSS 2 and SS 2 public schools in mathematics through the use of their spread sheet. The population of this research is basically students that were in JSS 2 and SS 2 in Ondo West Local Government Area, Ondo.

Sample /Sampling Techniques

Due to the fact that, whole public schools in Ondo West Local Government Area cannot be assess, the researcher then use random sample technique in order to achieve the possible outcome of the whole population hereby selecting six (6) secondary public schools in Ondo West Local Government Area. They are: St .Louis (Catholic) Secondary School, St. Joseph College, C.A.C. Grammar School,St. James Secondary School, St. Monica's Girls Grammar School and St. Helen's (Unity) Secondary School, Ondo.

Therefore, the study sample consists of students scores in mathematics in JSS 2 and SS 2 (same students) and 20 students scores were chosen randomly from each of the selected secondary school.In this study, spreadsheets of JSS 2 and SS 2 of the same student will be collected. The data were analyzed using T- Test on data provided from the selected secondary schools in terms of the scores in their sheets in JSS 2 and SS 2 especially in mathematics. Therefore, the data obtained were transformed into data sheets in which the detailed analyses of the data are shown in chapter four.

3. RESULT PRESENTATION AND DATA ANALYSIS

The instrument used in the data analysis is t-test, as a method of data analysis.

T – Test :

$$\frac{\bar{x} - \bar{y}}{\sqrt{\frac{s^2 x}{n_x} + \frac{s^2 y}{n_y}}}$$

$\bar{x}$ = mean of x, $\bar{y}$ = mean of y,

n_x = number of items (x), n_y = number of items (y),

$s^2 x$ = variance for x, $s^2 y$ = variance for y,

Since, $n_x = n_y = 20$

$$\frac{\bar{x} - \bar{y}}{\sqrt{\frac{s^2 x + s^2 y}{n}}}$$

And, $s^2x = \dfrac{\varepsilon x^2}{n_x} - \bar{x}^2$, $s^2y = \dfrac{\varepsilon y^2}{n_y} - \bar{y}^2$,

Research Hypothesis

$H_{0(1)}$: There is no significance relationship in the quality of teachers and students academic performance.

$H_{0(2)}$: There is no significance relationship in learners study habit and their performances

$H_{0(3)}$: There is no significant relationship in the performance of students in JSS 2 and SS 2 public school in terms of educational resources.

Table 1: T – test analysis on the correlation of JSS 2 and SS 2 student (same student) scores in mathematics in St. Monicas Grammar school for 2012/2013 (JSS 2) and 2015 / 2016 (SS 2) is shown.

Variables	N	$\bar{x}$	s^2	Df	t- Cal	T – Critical
JSS 2 (x)	20	56.75	191.4875	18	1.5525	1.697
SS 2 (y)	20	50.95	87.6475	18	1.5525	1.697

From the table 1, the analysis shows that the calculated t-value (1.525) is lesser to the critical value of 1.697 at 18 degree of freedom at 0.05 level of significance. Hence, the H_0 is accepted; therefore, there is no significant relationship in the quality of teachers and students academic performance, and learners study habit and their performances, also in the performance of students in JSS 2 and SS2 public school in terms of educational resources.

Table 2: T-test analysis on the correlation on academic performance of students in JSS 2 and SS 2 (same student) score in mathematics in St. Helen's (unity) secondary school for 2012/2013 (JSS2) and 2015/2016 (SS2) is shown.

Variables	N	$\bar{x}$	s^2	Df	t- Cal	T – Critical
JSS 2 (x)	20	69.7	123.51	18	8.5875	1.697
SS 2 (y)	20	40.75	103.7875	18	8.5875	1.697

From the table 2, the analysis shows that the calculated value t-vale (8.5875) is higher than 1.697 (the critical value) at 18 degree of freedom at 0.05 level of significance. Hence, the H_0 is rejected; therefore, there is significance relationship in the quality of teachers and students academic performance, and in learners study habit and their performances, also in the performance of students in JSS 2 and SS 2 public school in terms of educational resources.

Table 3: T-test analysis on the correlation on academic performance of JSS 2 and SS 2 students (same student) score in mathematics in St. Louis (Catholic) secondary school for 2012/2013 (JSS2) and 2015/2016 (SS2) is shown.

Variables	N	$\bar{x}$	s^2	Df	t- Cal	T – Critical
JSS 2 (x)	20	67.75	127.9875	18	-1.9280	1.697
SS 2 (y)	20	74.45	113.5475	18	-1.9280	1.697

From the table 3, the analysis shows that calculated value (-1.9280) is lesser than 1.697 (t-critical) at 18 degree of freedom at 0.05 level of significance. Hence, the H_0 is accepted; therefore, there is no significant relationship in the quality of teachers and students academic performance, and in learners study habit and the performance, also in the performance of students in JSS 2 and SS 2 public school in terms of educational resources.

Table 4: T-test analysis on the correlation on academic performance of JSS 2 and SS 2 students (same student) score in mathematics in St. Josephs' college for 2012/2013 (JSS2) and 2015/2016 (SS2) is shown.

Variables	N	$\bar{x}$	s^2	Df	t- Cal	T – Critical
JSS 2 (x)	20	76.2	173.76	18	2.7145	1.697
SS 2 (y)	20	66.75	68.6825	18	2.7145	1.697

From the table 4, the analysis shows that calculated value (2.7145) is greater than 1.697 (t-critical) at 18 degree of freedom at 0.05 level of significance. Hence, the H_0 is rejected; therefore, there is significant relationship in the quality of teachers and students academic performance, and in learners study habit and the performance, also in the performance of students in JSS 2 and SS 2 public school in terms of educational resources.

Table 5: T-test analysis on the correlation on academic performance of JSS 2 and SS 2 students (same student) score in mathematics in St. James (Catholic) grammar school for 2012/2013 (JSS2) and 2015/2016 (SS2) is shown.

Variables	N	$\overline{x}$	s^2	Df	t- Cal	T – Critical
JSS 2 (x)	20	34.95	504.0475	18	-2.7369	1.697
SS 2 (y)	20	53.45	409.7475	18	-2.7369	1.697

From the table 5, the analysis shows that calculated value (-2.7369) is lesser to the critical value 1.697 at 18 degree of freedom at 0.05 level of significance. Hence, the H_0 is accepted; therefore, there is no significant relationship in the quality of teachers and students academic performance, and in learners study habit and the performance, also in the performance of students in JSS 2 and SS 2 public school in terms of educational resources.

Table 6: T-test analysis on the correlation on academic performance of JSS 2 and SS 2 students (same student) score in mathematics in C.A.C grammar school for 2012/2013 (JSS2) and 2015/2016 (SS2) is shown.

Variables	N	$\overline{x}$	s^2	Df	t- Cal	T – Critical
JSS 2 (x)	20	63.95	103.8475	18	4.2115	1.697
SS 2 (y)	20	45.6	275.64	18	4.2115	1.697

From the table 6, analysis shows that the calculated t-value (4.2115) is greater than the critical value (1.697) at 0.05 level of significance. Hence, the H_0 is rejected; therefore, there is significant relationship in the quality of teachers and students academic performance, and the learners study habit and their performances, also in the performance of students in JSS 2 and Ss 2 public schools in terms of educational resources.

4. DISCUSSION

Result of the study shows that the academic performance of students is either affected by so many factors or not. It is seen in table 1, 3 and 5 that, there is no significant relationship in all the hypothesis. This could be as a result of students preparation toward their academic and being a boarding school, there time schedule for studying can't compare to that of day school, and to the day school (i.e. table 5) it is possible maybe they attend extra lessons, or their parents taught them and also, the availability of their needs be met. Table 2, 4, and 6 shows that, there is significant relationship in learners study habit and their performances also, in their performance in JSS 2 and SS 2. This could be as a result, of the learners intelligent quotient. In conclusion, the result shows that, the learners background and school quality will determine his performance. And, if the student background is good when he was in JSS 2 in a particular school, he/she will likely also perform very well on getting to SS 2.

Summary
In summary, it is seen that there are likely factors that warrant the result of a student academic performance. Table I, II, and V, showed that there is no significant relationship in the academic performance of the students in JSS 2 and SS 2 public schools in mathematics. While, in table II, IV, and VI, there is significant relationship. Conclusively, academic success required not only high cognitive ability but also sound habits and attitudes. Thus to enhance the quality of education, there is a need to improve the study habits, and attitudes of the students. From the findings of this study, it was concluded that a child's inherited potentials, family background, conducive learning environment, good physical setting, well trained and qualified teacher, adequate learning materials and the likes will help the child to perform well in mathematics and boost his/her academic performance in both JSS 2 and SS 2 in public schools. Also, that poor home climate has remained the 'major factor' that has crippled the academic performance of students if at all there will be other factors that affects the performance of the students. From the point of view a good home is a pre-requisite for academic performance, since the first environment of any child is the home. It is the home that prepare the child physically, socially, educationally and economically. The home is the foundation of any adventure without which the child cannot engage in any meaningful and successful venture.

5. CONCLUSION

Because, human beings especially during teens age will have pleasure mostly on unnecessary things, distractions here and there, they will like to hang up with bad groups, not care about their academics any longer. Children who their parents didn't care about them from onset will have problem in this stage hereby doing things and see all to be right. They will like to hang up with bad groups, not care about their academics any longer and see failure as a good thing.

In the other hand, children who their parents cares for, have time for their children, and there is a good intimacy between the parent & their children and help them with their home works, explain difficult questions, correct them where necessary etc.

It is obvious, that this kind of student will be serious in all aspect especially in the academic aspect, hereby performing excellently in his or her academics at school. Finally, for students to perform very well or woefully in JSS 2 and SS 2, it depends on their readiness, seriousness and others factors which have been discussed in this study.

Recommendations

Results of the research study revealed several remarkable findings. Based on the findings, the following recommendations are made:

1. Government should organize programmes which involves teachers like conference, workshops etc. which may be annually or there about in order to keep the brain of the teachers more refreshing every time and to update them about education.
2. In order to help students during teens age or adolescent stage, the ministry of education should make sure the school curriculum includes subjects that will guide the students during this stage.
3. The ministry of education should reduce the bureaucracy in the school administration, allowing public schools to diversify their sources of funding, providing schools with adequate staff in guidance and counseling and increasing the number of teachers and classrooms to reduce students – teacher ratio.
4. Value of teachers quality in terms of experience, qualification, ability to prepare for lessons should be honoured and compensated in order to give teachers the motivation to adequately do their jobs and support student learning to improve their performances.
5. Students should belong to study groups in the schools so that, they can exchange ideas that will help them to excel in their academics.
6. Students should be serious with their academics either in Junior Secondary School or Senior Secondary School and devote time to study hard and neglect bad company.
7. School establishment should be based on standard so that, student will have a good or solid background.
8. Parents should be actively involved in supervising students academic work at home, giving them enough time at home to revise their notes, hiring private monitors for them where it is possible, visiting them regularly at the school to know how they progress in learning and their discipline at school. And also, be available to meet the needs of their children in all aspect as well as guardians.
9. Parents should train their children so that, they will not be distracted by their environment but, focus on their studies.
10. Government should organize programmes for the adolescent in order to enlighten them at the early stage and not to be carried away by youthful lust.

Conflicting interests

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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